REMARKS

Filed concurrently herewith is a request for a Three-Month Extension of Time which extends the shortened statutory period for response to December 29, 2004. Accordingly, Applicants respectfully submit that this response is being timely filed.

The Official Action dated June 29, 2004 has been received and its contents carefully noted. In view thereof, claim 10 has been amended in order to better define that which Applicants regard as the invention. As previously, claims 10, 12, 24 and 25 are presently pending in the instant application.

With reference now to the Official Action and particularly paragraph 3 thereof, claims 10, 12, 24 and 25 have been rejected under 35 U.S.C. §112, first paragraph as failing to comply with the written description requirement. Particularly, the Examiner states that the phrase "in a content of 1.9 to 20 mass percent with respect to the total mass" set forth in claim 10 fails to satisfy the written description requirement. In this regard, as can be seen from the foregoing amendments, the recitation noted by the Examiner has been deleted and consequently it is respectfully submitted that independent claim 10 now clearly complies with the written description requirement of 35 U.S.C. §112, first paragraph. Accordingly, it is respectfully submitted that Applicants' claimed invention is now in proper formal condition for allowance.

With reference now to paragraph 5 of the Office Action, claims 10, 12, 24 and 25 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,514,745 issued to Yoshino in view of U.S. Patent No. 4,334,040 issued to Fujii et al. and U.S. Patent No. 5,409,991 issued to Mitsuno et al. This rejection is respectfully traversed in that the combination proposed by the Examiner neither discloses nor suggests that which is presently set forth by Applicants' claimed invention.

As the Examiner can readily appreciate, the present invention is directed to a long glass fiber filler reinforced resin material for molding wherein breakage of the long glass fiber filler in molding processing is suppressed by using a master batch that is a composite of a matrix polymer having a high MFR, i.e., a low molecular weight and low viscosity. In accordance with the present invention, it has been found that by surpressing the breakage of the long glass fiber filler, the Izod impact values as well as the bending modulus of the molding article significantly improve. It is in accordance with this invention that the inventors have found the effective range of MFR which obtains this improvement.

When the matrix polymer having a high MFR is itself used, the brittleness of the molded article becomes lower and the mechanical properties such as the bending modulus and the Izod impact values also become lower. Thus, in accordance with the present invention the homopolypropylene having a high pentad isotactic index, i.e., a high degree of crystallinity is used as the matrix copolymer to improve the bending modulus as well as the Izod impact values. Additionally, the diluent polymer of an ethylene-propylene block copolymer having high crystallinity is mixed into the matrix polymer to further improve the Izod impact values.

Specifically, independent claim 10 recites that the long glass fiber filler reinforced resin material includes a master batch comprising a matrix polymer of a homopolypropylene having a pentad isotactic index of at least 95%, and a weight average molecular weight of 70,000 to 125,000; a long glass fiber filler included in a content of 30 to 50 mass percent with respect to a total mass, a surface of the long glass fiber filler being treated with a coupling agent, and an affinity providing component comprising at least one selected from a group consisting of maleic anhydride-denatured polypropylene and acrylic acid-denatured polypropylene as a constituent having a functional group that reacts chemically with the

coupling agent with which the surface of the long glass fiber filler is treated wherein at least the matrix polymer and the long glass fiber filler form a composite. Furthermore, as recited in independent claim 10, the long glass fiber filler reinforced resin material further includes a diluent polymer of an ethylene-propylene block copolymer comprising a polypropylene component having a pentad isotactic index of at least 95%, the diluent polymer having an islands-sea structure in which domains of the polyethylene component are formed in the polypropylene component; wherein a melt flow rate of the matrix polymer of the master batch measured according to JIS K7210, at a temperature of 230° C and a load of 21.18N is 100 to 300g/10min., and the melt flow rate of the matrix polymer of the master batch is larger than twice a melt flow rate of the diluent polymer. It is respectfully submitted that the combination proposed by the Examiner fails to render obvious the specific long glass fiber filler reinforced resin material as recited in independent claim 10.

With respect to the combination proposed by the Examiner, it is clear that Yoshino fails to disclose or suggest the features of the present invention. Particularly, Yoshino discloses that a molding having a higher strength can be obtained when the melt flow rate of the master batch polypropylene is high, if the melt flow rate of the diluting polypropylene is reduce as noted in col. 8, lines 54-57. That is, Yoshino merely discloses using the diluent polymer having the low MFR to overcome low mechanical properties of the molded article caused by the matrix polymer having a high MFR. It is clear from a review of the Yoshino reference, that this reference fails to disclose overcoming low mechanical properties of the molded article by using homopolypropylene having a high pentad isotactic index and hence a high degree of crystallinity as the matrix polymer as is specifically recited by Applicants' claimed invention. As noted in examples 1 and 2 of the Yoshino reference, the description of the MFRs of the matrix polymer are 82 and 95 respectively. These valves are lower than that

of the present invention. It is also shown by examples 1-5 of Table 1 of Yoshino that as the MFR of the matrix polymer is higher or increased, the Izod impact values are reduce or decreased which is directly contrary to that of the present invention. In further review of the Yoshino reference, it is noted that the object of the invention set forth by Yoshino as recited in col. 2, lines 49-64 is to provide:

a.) uniform dispersion of glass fibers in a master batch produced by drawing;

b.) efficiently high adhesion of the interface between the glass fibers and a polypropylene resin in a master batch; and

c.) maintaining matrix resin viscosity in a master batch within a particular range to reduce the apparent viscosity of the entire master batch and to ensure the desired strength.

Furthermore, Yoshino discloses that the average or median length of the permanent length of fibers in a molding obtained by melting and molding the mixture of the master batch and polypropylene resin is preferred to be about 0.8 to about 10 mm as noted in col. 8, lines 13-16. It is further noted that Yoshino discloses that in order to maintain the average permanent glass fiber length at the above noted 0.8 to about 10 mm, it is preferred that a comparatively moderate melt molding condition be set for the melt process molding mixture of his invention, i.e., a smaller kneading force which reduces the shearing force applied to the molten resin (col. 8, lines 27-32), such that the glass fibers in the melt process molding mixture can be sufficiently dispersed with a reduced kneading force (col. 8, lines 26-29), and that according to the Yoshino invention, high-strength melt process moldings can be obtained. Such high strength melt process moldings are obtained because the content of the long glass fibers in the master batch is large and the adhesion of the glass fibers and the

polypropylene resin in the master batch is improved by surface finishing of the glass fibers and modification of the polypropylene resin. Furthermore, it is thought that the polypropylene of the master batch can disperse easily in the diluting polypropylene because the master batch polypropylene, having strong bonds around the surfaces of the glass fibers and having a high fluidity, has an affinity with the diluting polypropylene and has its apparent viscosity reduced at the time of melting and molding as noted in col. 8, lines 40-53.

On the other hand, in accordance with the present invention the MFR of the matrix polymer is at an appropriately high level, and when the resin material is heated or kneaded in the injection molding machine, the long glass fiber filler is coated and protected with the matrix polymer and maintains this state. That is, the long glass fiber filler is prevented from being coated with the diluent polymer, and the difference in the viscosity between the solid phase and the molten phase of the matrix polymer becomes small. Consequently, breakage of the long glass fiber filler can be effectively suppressed. As discussed hereinabove, the Yoshino reference clearly fails to disclose or remotely suggest the features of the present invention. Therefore, it is respectfully submitted that Yoshino fails to disclose that the Izod impact values of the molded article are effectively improved while using the matrix polymer having a high MFR as the master batch, and the mechanical properties of the molded article are improved by using a master batch and a diluent polymer having a high crystallinity.

As to the teachings of Mitsuno et al., this reference likewise fails to disclose or suggest the above-noted features of the present invention. That is, Mitsuno et al. requires a rubber-like material (H) and/or a modified rubber-like material (I) for the resin material, which is clearly significantly different form that of the present invention. When the resin material contains the rubber-like material (H) and/or the modified rubber-like material (I), the Izod impact values of the molded article rise while the bending modulus is greatly

reduced. Therefore, the resin material of Mitsuno et al. cannot achieve the high Izod impact values and high bending modulus of the molded article, simultaneously. More importantly, Mitsuno et al. fails to disclose using homopolypropylene having a high pentad isotactic index to overcome how mechanical properties due to the homopolypropylene having a high MFR. Consequently, one of ordinary skill would not turn to the teachings of Mitsuno et al. in the manner suggested by the Examiner.

Mitsuno et al. discloses that the rubber-like material (H) is used in the invention for improving the impact resistance, see col. 12, lines 25-27. From this description, it is clear that the object of Mitsuno et al. is to improve the impact resistance by including the rubber-like material (H) or the like in the resin material. On the other hand, in accordance with the present invention both high bending modulus and high Izod impact values of the molded article are achieved by using homopolypropylene having a high pentad isotactic index and high MFR as the matrix polymer.

Mitsuno et al., moreover, discloses that the polypropylene type resin (E), which presumably corresponds to the matrix polymer of the present invention, has a MFR of preferably 0.1-100 g/10 min., and more preferably 0.5-40 g/min, see col. 10, lines 37-45. Thus, the resin material of Mitsuno et al. is not a matrix polymer having a high MFR, as in the present invention.

It is noted that in examples 22 and 45 of Mitsuno where a glass fiber is used, the MFR of the graft polypropylene (A) and the graft polypropylene (B) expresses 36 and 21, respectively.

For the foregoing reasons, it is respectfully submitted that Mitsuno et al. fails to disclose or suggest the features of the present invention. That is, this reference when taken alone or combined with Yoshino fails to disclose homopolypropylene having a high pentad

isotactic index and high MFR being used as the matrix polymer, so as to achieve both high bending modulus and high Izod impact values of the molded article. Hence, the resin material of Mitsuno et al. or the combination of Yoshino and Mitsuno et al. is clearly different from that of the present invention.

The following table shows the bending modulus and the Izod impact values in Examples 22 and 45 in terms corresponding to those of the present invention. According to the table, both mechanical properties are far lower than those of the present invention.

	Bending Modulus (GPa)	Izod Impact Values (KJ/m^2)
Example 22	1.26	15.19
Example 45	1.66	14.11

In Mitsuno et al., filler such as glass fiber is merely an additional material. Furthermore, Mitsuno et al. fails to disclose or suggest suppressing breakage of the glass fiber as is the case with the present invention.

With respect to the teachings of the newly sited reference to Fujii et al., it is respectfully submitted that this reference clearly fails to disclose or suggest the features of the present invention as discussed hereinabove in detail. Fujii et al. merely discloses that an ethylene propylene copolymer improves the impact resistance. However, this reference clearly fails to overcome the aforementioned shortcomings associated with Yoshino and Mitsuno et al.

As discussed hereinabove in detail, at least one advantage of the present invention resides in using homopolypropylene having high MFR as a matrix polymer to suppress breakage of long glass fiber filler, and then overcoming low mechanical properties due to the homopolypropylene having a high pentad

isotactic index, so as to achieve both high bending modulus and high Izod impact values of the resultant molded article. Clearly, the prior art combination proposed by the Examiner fails to render that which is presently set forth in independent claim 10 obvious.

Specifically, all the references, Yoshino, Mitsuno et al. and Fujii et al. fail to disclose or suggest using homopolypropylene having a high MFR as a matrix polymer to suppress breakage of the long glass fiber filler. Hence, while it is Applicants' position that the requisite motivation for combining the references in the manner suggested by the Examiner is not present, even if these references are combined in the manner suggested by the Examiner, the present invention is not achieved. Moreover, as noted hereinabove, Mitsuno et al. fails to disclose using homopolypropylene having a high pentad isotactic index to overcome low mechanical properties due to the homopolypropylene having a high MFR. Hence, it is respectfully submitted that there is no motivation for combining the teachings of Mitsuno et al. with that of Yoshino as suggested by the Examiner. Therefore, it is respectfully submitted that Applicants' claimed invention as set forth in independent claim 10, as well as those claims which depend therefrom clearly distinguish over the combination proposed by the Examiner and are in proper condition for allowance.

With respect to the Examiner's response to Applicants' arguments set forth in paragraph 6 of the Office Action, it is respectfully submitted that the foregoing detailed discussion with respect to the teachings of Yoshino, Mitsuno et al. and Fujii et al. insofar as they apply to Applicants' claimed invention clearly sets forth the differences between the present invention and that of the proposed combination as well as the reasons why the combination proposed by the Examiner is not proper. Accordingly, it is respectfully requested that the rejection of claims 10, 12, 24 and 25 be thoroughly be reconsidered by the

Examiner in view of the foregoing comments, that claims 10, 12, 24 and 25 be allowed and that the application be passed to issue.

Should the Examiner believe a conference would be of benefit in expediting the prosecution of the instant application, he is hereby invited to telephone counsel to arrange such a conference.

Respectfully submitted,

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